

"The large rivers were peopled with crocodiles; turtles and porpoises floated upon them; and these tenants of the water, strange and varied as they were, and unlike the present inhabitants of the district, were not without resemblance to many species still met with on the earth.

"The interior of the land, of which the surrounding waters were thus peopled, was no less remarkable, and exhibited appearances no less instructive. Troops of monkeys might be seen skipping lightly from branch to branch in the various trees, or heard mowing and chattering and howling in the deep recesses of the forest. Of the birds, some, clothed in plumage of almost tropical brilliancy, were busy in the forests, while others, such as the vulture, hovered over the spots where death had been busy. Gigantic serpents might have been seen insidiously watching their prey. Other serpents in gaudy dress were darting upon the smaller quadrupeds and birds, and insects glittered brightly in the sun. All these indications of life and activity existed, and that, too, not far distant from the spots on which are placed the two most important cities in the world. But this happened not only before our island was visited by its earliest human discoverer, but long before man had been introduced on the earth."

The illustrations of the work (which is gorgeously "got up") deserve much praise; the absence of complicated detail renders their comprehension more easy by general readers.

Altogether this is a welcome addition to a class of books which we hope to see increase, namely popular scientific works written by scientific men.

## PROCEEDINGS OF LEARNED SOCIETIES.

### ZOOLOGICAL SOCIETY.

Feb. 23, 1847.—William Yarrell, Esq., Vice-President, in the Chair.

DRAFTS FOR AN ARRANGEMENT OF THE TROCHILIDÆ, WITH DESCRIPTIONS OF SOME NEW SPECIES. BY JOHN GOULD, F.R.S.

Genus PETASOPHORA, G. R. Gray (*Heliothryx*, Boie; *Ramphodon*, Less.; *Colibri*, Spix).

This is one of the best-defined groups of the family, and is distinguished by several peculiarities, the principal of which are the greatly developed ear-coverts and their blue colour, and the similarity in the colouring of the sexes, the females possessing all the brilliancy of the males and only distinguishable from them by their smaller size and more delicate contour: the young too assume the plumage of the adult.

The oldest known species of this form constitutes the type; it is the

Sp. 1. PETASOPHORA SERRIROSTRIS.

*Trochilus serrirostris*, Vieill. Nouv. Dict. tom. vii. p. 359;  
Ency. Méth. part 2. p. 561; Ois. Dor. tom. iii. pl. 1.  
ined.

*Ornismya petasophora*, Less. Ois. Mon. pl. 1; Ib. Troc. pls. 12 & 59; Pr. Max. de Wied, sp. 10; Temm. Pl. Col. 203. fig. 3; Jard. Nat. Lib. vol. i. p. 120. pl. 13, male; vol. ii. p. 81. pl. 15, fem.

*Petasophora serrirostris*, G. R. Gray, List of Gen. of Birds, 2nd edit. p. 17.

*Hab.* Brazil.

Sp. 2. PETASOPHORA CYANOTUS.

*Trochilus cyanotus*, Bourc. Rev. Zool. 1843, p. 1; Ann. de Lyons, tom. vi. p. 41, but not the *cyanotus* stated by Lesson to be synonymous with *Delphinæ*.

This species appears to be the representative in the Cordilleras of the *P. serrirostris* of the Brazils, from which it is at once distinguished by the blue colouring of the ear-coverts.

*Hab.* Bogota.

Sp. 3. PETASOPHORA THALASSINA.

*Trochilus thalassinus*, Swains. Syn. Birds of Mexico, in Phil. Mag. June 1827, p. 441.

Differs from the other members of the genus by being of a smaller size and by the greater extent of the blue on the cheeks and ear-coverts; it has also a slight wash of blue on the chin and centre of the abdomen.

*Hab.* Mexico.

Sp. 4. PETASOPHORA ANAIS.

*Ornismya Anais*, Less. Col. Supp. pl. 3; Less. Troc. pls. 55, 56, 57; Rev. Zool. 1838, p. 315, 1839, p. 19; Less. Velin, no. 11; Echo du Monde savante, 1843, no. 31. ined. pl. 11.

Much confusion evidently exists with respect to this species, M. Lesson having figured one bird and described another with the same appellation; under these circumstances it will be to the advantage of science to retain the specific term *Anais* for the bird best known to ornithologists by that designation, the species so common in all collections from Bogota, the *great Anais* of the French, and which is a very fine species, distinguished by the existence of a well-defined band of blue on the throat. The female is fully as bright as the male, but at least one-third smaller in size.

*Hab.* Venezuela and all the Cordilleras in the neighbourhood of Bogota.

Sp. 5. PETASOPHORA IOLOTA, sp. nov. *Pet. capite, et corpore superiore saturatè viridibus; mento, spatio suboculari, auribus, et medio abdomine intensè, metallicè, cyaneis; corpore inferiore nitense viridi; gula quasi tessellatâ, quia mediæ plumæ quam pogoniæ extremæ obscurius nitent; tectricibus caudæ inferioribus pallidis ad margines pallidioribus.*

Head and all the upper surface deep green, in some specimens tinged with gold; primaries and secondaries brown, tinged with purple; chin, space beneath the eye, ear-coverts and the centre of

the abdomen rich deep metallic blue; all the under surface rich deep glossy green, the throat presenting a tessellated appearance, occasioned by the reflection from the webs throwing a darker hue on the centre of each feather; under tail-coverts pale, with lighter margins; two centre tail-feathers golden green, the remainder steel or bluish shining green, crossed near the extremity by a broad band, which is dull black on the upper surface and shining steel-blue on the under; bill and feet black.

Total length,  $5\frac{3}{4}$  inches; bill,  $1\frac{3}{8}$ ; wing,  $3\frac{3}{8}$ ; tail,  $2\frac{1}{4}$ .

The female is similar to the male in plumage, but smaller in size. Nearly allied to the preceding, but larger and finer in every respect. *Hab.* Bolivia.

Sp. 6. *PETASOPHORA CORUSCANS*.

Vide Proc. of Zool. Soc. Part 14. pp. 44 & 90.

Sp. 7. *PETASOPHORA DELPHINÆ*.

*O. Delphinæ*, Less. Rev. Zool. 1839, p. 44; Echo du Monde savante, 1843, no. 31; Less. Ill. de Zool. tom. ii. 1832, pl. 64.

Sp. 8. *PETASOPHORA*? *GEOFFROYI*.

*Trochilus Geoffroyi*, Bourc. et Muls. Ann. de Lyons, tom. vi. p. 37.

It will probably be necessary at some future period to make this the type of a new genus.

The eight species enumerated above comprise every member of this beautiful genus with which I am acquainted; I possess, however, some immature specimens which may be referable to a ninth species, in which case it will prove to be most nearly allied to *P. serrirostris*. They differ from that bird in having the two outer tail-feathers rather largely tipped with white, the lower part of the abdomen greyish white, and in the ear-coverts being very diminutive. Although I have little doubt of their being distinct, I prefer seeing other specimens before characterizing them.

#### GENUS OREOTROCHILUS, n. g.

*Rostrum* capite longius, subcylindricum, paulo incurvum. *Alæ* subgrandes valentes. *Cauda* magna, rotundata, rectricibus attenuatis, submucronatis, rigidis. *Pedes* fortes. *Digitus* et unguis postici digito et ungui mediis longitudine æquales. *Tarsi* plumis vestiti. *Gula* luminosa infra torquata.

*Gen. Char.*—Bill longer than the head, almost cylindrical, but slightly curved downwards; wings rather large and powerful; tail large and rounded, the feathers narrow, rather pointed and rigid; feet strong, the hind-toe and nail about equal in length to the middle toe and nail; tarsi clothed with feathers. Throat luminous, bounded below by a distinct collar.

I propose this term as a generic appellation for a section of the *Trochilidæ*, which has hitherto only been found immediately beneath the line of perpetual congelation, where they feed upon the insects which resort to the newly expanded flowers. The type is

## Sp. 1. OREOTROCHILUS ESTELLA.

*Orthorhynchus Estella*, D'Orb. Voy. Am. Birds, pl. 6.  
fig. 1; D'Orb. et La Fres. in Guérin's Mag. de  
Zool. 1838, p. 31.

*O. Ceciliæ*, Less. Rev. Zool. 1839, p. 43.

Sp. 2. OREOTROCHILUS LEUCOPLEURUS, sp. nov. *Oreot. capite, corpore superiore, alisque, olivaceo-fuscis, griseo tinctis; tectricibus caudæ superioribus sordide æneo-viridibus; rectricibus duabus intermediis viridibus, æneo splendidibus; rectricibus lateralibus sordide albis, apicibus et marginibus exterioribus fuscis; gula luminose viridi, fasciâ semilunari holoserica atrâ infra ornata; medio abdomine lateribusque nigris; mediis sed lateribus et pectore albis.*

Head, all the upper surface and wings greyish olive-brown, passing into dull coppery green on the upper tail-coverts; two centre tail-feathers green, with bronze reflections; lateral tail-feathers dull white, margined externally and tipped, dull brown gradually blending into the white; throat rich luminous grass-green, bounded below by a crescentic band of deep velvety black; breast and centre of the flanks pure white; the remainder of the flanks and centre of the abdomen bluish black; feet dark olive-brown; bill black.

Total length,  $4\frac{3}{4}$  inches; bill, 1; wing,  $3\frac{1}{4}$ ; tail,  $2\frac{3}{8}$ .

This species is nearly allied to the preceding, but differs from it in being somewhat smaller and in having the centre of the abdomen black instead of chestnut.

*Hab.* The Chilian Cordilleras.

## Sp. 3. OREOTROCHILUS CHIMBORAZO.

*T. Chimborazo*, Bourc. in Rev. Zool. Sept. 1846, p. 305.

## Sp. 4. OREOTROCHILUS ADELA.

*Orthorhynchus Adela*, D'Orb. Voy. Am. Birds, pl. 61.  
fig. 2; D'Orb. et La Fres. Mag. de Zool. 1839.

Sp. 5. OREOTROCHILUS MELANOGASTER, sp. nov. *Oreot. omni corpore superiore olivaceo-fusco aureo nitente, tectricibus caudæ superioribus viridi lavatis; alis griseo-fuscis purpureo splendidibus; gula fulgente viridi, pectore et abdomine intense cyaneo-atris.*

All the upper surface olive-brown, with a golden lustre, and washed with green on the upper tail-coverts; wings greyish brown, with purple reflections; throat rich lustrous grass-green; breast and abdomen rich deep bluish black; flanks rusty brown; tail green, with bronze reflections; bill black; feet olive-black.

Total length, 5 inches; bill, 1; wing,  $3\frac{1}{4}$ ; tail,  $2\frac{1}{4}$ .

*Hab.* unknown.

This fine species is in the collection of Mr. John Leadbeater, to whom I am indebted for the loan of it for the purpose of describing.

Mr. Gould then described a fourth new species of Humming Bird, belonging to the genus *Calothorax*, as

TR0CHILUS (CALOTHORAX) CALLIOPE. *Cal. corpore superiore viridi; alis caudaque griseo-fuscis; gula plumis elongatis, atte-*



*nuatis, coccineis, basibus albis in formâ stellæ ordinatis; pectore, abdomine medio, tectricibusque caudæ inferioribus, albis; lateribus cervino-albis.*

Upper surface green; wings and tail greyish brown; feathers of the throat elongated, narrow, and of a rich pinky scarlet, with white bases arranged in a starred form; breast, centre of the abdomen and under tail-coverts white; flanks buffy white; bill and feet blackish brown.

Total length,  $2\frac{1}{2}$  inches; bill,  $\frac{5}{8}$ ; wing,  $1\frac{1}{2}$ ; tail, 1.

This is a very diminutive species, much smaller than the *C. cyanopogon*, but of precisely the same form.

*Hab.* Mexico; precise locality unknown.

The Secretary, on the part of Dr. Falconer, exhibited the lower end of the left tibia of a gigantic fossil Struthious Bird from the Sewalik Hills. This interesting remain indicates a very close generic representation of the existing African *Struthio* in the extinct fauna of Asia. Although not altogether unexpected, this is a valuable addition to the facts previously demonstrated in relation to the genera *Camelopardalis*, *Camelus*, *Elephas*, and *Hippopotamus*.

March 9.—William Yarrell, Esq., Vice-President, in the Chair.

The following communications were read:—

1. NOTE ON THE RED CORPUSCLES OF THE BLOOD OF THE MEMINNA DEER (*Moschus Meminna*, Erxl.). BY GEORGE GULLIVER, F.R.S.

After I had made known the curious minuteness of the red corpuscles of the blood of that little ruminant the Napu Musk Deer, it was to be expected that these corpuscles would present the same character in the rest of the genus. Accordingly, I some time ago found this to be the case in the Stanley Musk Deer; and it appears, from an examination which I have lately made of the blood-corpuscles of the Meminna Deer, that these are not distinguishable in size from those of the Napu Musk Deer.

The following measurements of the red corpuscles of the blood of the Meminna Deer exactly agree with the measurements of the corresponding corpuscles of the Napu Musk Deer. They are, as usual, given in vulgar fractions of an English inch:—

13400	} Common sizes.
12000	
16000	Small size.
9600	Large size.

12325 Average of all the above sizes.

So minute are these corpuscles, that vast numbers of them measure no more over the flat surface of the disc than the edge or thickness of the red corpuscle of human blood, the average of which appears from my measurements to be  $\frac{1}{12400}$ th of an inch.

The size of the blood-corpuscles in the ruminants affords a good illustration of the law, which I have elsewhere deduced from very numerous measurements, that in the smallest species of a natural order or family of mammals the blood-discs are much more minute than in

the largest species of that family; while in the entire class of Birds, the law as to the size of the blood-corpuscles is the same as in a single order of mammals.

Therefore, when that eminent inquirer Hewson states that these corpuscles are not larger in the largest animals, citing in support of his argument the Ox and Mouse, it must be understood as applicable only to mammals of different orders. Among the rodents which I have examined, the great species, as the Capybara and the Beaver, have much larger blood-corpuscles than the smallest species, as the Bank Vole and the Harvest Mouse.

## 2. CHARACTERS OF SIX NEW GENERA OF BATS NOT HITHERTO DISTINGUISHED. BY J. E. GRAY, ESQ., F.R.S. ETC.

The first four genera belong to the tribe of *Phyllostomina*, or Nose-leaved Bats.

### 1. MIMON.

*Ch. gen.*—*Membrana interfemoralis* magna, truncata. *Alæ* latæ, margine anteriore lato, a summo talo extenso. *Pedes* elongati. *Crura* nuda. *Cauda* mediocris, inclusa; apice superiore, mediano. *Aures* laterales, magnæ. *Mentum* tuberculo parvo utrinque signatum; tuberculis striâ angustâ divisus. *Pollex* longus, attenuatus; articulis æqualibus. *Dentes* incisores  $\frac{4}{2}$ ; duo medii superiores magni; inferiores parvi, stipati.

*Ch. gen.*—Interfemoral membrane large, truncated. Wings broad, with a broad front margin from the upper part of the ankle. Feet elongated. Legs bald. Tail moderate, enclosed; apex superior, medial. Ears lateral, large. Chin with a small tubercle on each side, separated by a narrow groove. Thumb long, slender; joints equal. Cutting teeth  $\frac{4}{2}$ ; two middle upper large; lower small and crowded.

In the collection at the British Museum there are two species of this genus, viz. 1. *M. Bennettii* = *Phyllostoma Bennettii*, Gray, Mag. Zool. and Bot. vol. ii. p. 6; and 2. *M. megalotis* = *Phyllophora megalotis*, Gray, Ann. and Mag. N. H. 1842, p. 257; Voy. Sulphur, t. v. fig. 2.

### 2. TRACHOPS.

*Ch. gen.*—*Membrana interfemoralis* magna, truncata. *Alæ* a summo talo extensæ. *Pedes* osse calcis elongato insignes. *Crura* nuda. *Cauda* mediocris, inclusa; apice superiore, mediano. *Aures* permagnæ, laterales. *Mentum* et *labia* verrucosa, stria lævis angusta in medio mento. *Dentes* incisores  $\frac{4}{4}$ ; medii superiores magni, lati, incis; inferiores irregulariter ordinati.

*Ch. gen.*—Interfemoral membrane large, truncated. Wings from the upper part of the ankles. Feet with the heel-bone elongate. Legs bald. Tail moderate, enclosed; apex superior, medial. Ears very large, lateral. Chin and lips covered with warts; chin with a narrow smooth groove in front. Cutting teeth  $\frac{4}{4}$ ; middle upper large, broad, notched; lower in an irregular series.

Type, *T. fuliginosus*.

This species is characterized by its sooty-black colour. My son-in-law, Mr. J. P. G. Smith, collected it at Pernambuco, and sent two females to the Brit. Mus.

*Vampyris cirrhosum*, Spix, Vesp. Braz. t. xxvi. f. 3, evidently belongs to the same genus, if indeed it is distinct from the species above noticed. He describes his specimen as chestnut. It is to be observed that his figure is only one-third of the natural size of the animal he described, although it is not noticed on the plate.

### 3. AMETRIDA.

*Ch. gen.*—*Membrana interfemoralis* sublata, truncata. *Alæ* a digitorum basi extensæ. *Crura* nuda. *Caput* rotundum, rostrum perbreve, depressum, latum; frons rotundata. *Mentum* triangulari tuberculorum mole scabrum. *Pollex* elongatus, articulo superiore longo, attenuato, inferiore brevi. *Dentes* incisores  $\frac{4}{4}$ ; superiores medii, elongati, conici, acuti; inferiores laterales, parvi, incisivi.

*Ch. gen.*—Interfemoral membrane rather broad, truncated. Wings from the base of the toes. Legs bald. Feet small. Tail none. Head round; muzzle very short, depressed, broad; forehead rounded. Ears moderate, lateral. Chin with a triangular group of tubercles in front. Thumb elongated, the upper joint long, slender; the lower short. Cutting teeth  $\frac{4}{4}$ ; the upper middle elongated, conical, acute; lateral and lower small, notched.

*A. centurio*, Epauletted Ametrida.

*Ch. sp.*—Sooty-brown; forehead, chin, and a spot on each shoulder at the base of the wing white. Heel-bone one-third the length of the shin. Arm-bones 11 lines. Ears moderate, rounded at the end, rather arched out at the sides. Tragus moderate, denticulate at the tip and outer side. Nose-leaf ovate, lanceolate.

*Hab.* Brazils, Para. Collected by Mr. J. P. G. Smith.

### 4. NICON.

*Ch. gen.*—*Membrana interfemoralis* distincta, brevis, angulariter insectata. *Alæ* ab summo talo tensæ. *Pedes* elongati, liberi. *Os calcis* brevis. *Cauda* perbrevis, inclusa, in mediâ membranâ interfemoralis superior. *Mentum* striâ tuberculis parvis marginatâ insigne. *Pollex* elongatus; articulo superiore attenuato, inferiore incluso. *Dentes* incisores  $\frac{4}{4}$ ; duo medii superiores largiores, truncati; inferiores seriatim fornicati.

*Ch. gen.*—Interfemoral membrane distinct, short, angularly cut out. Wings from the upper part of the ankle. Feet elongate, free. Heel-bone short. Tail very short, enclosed, superior in the middle of the interfemoral. Ears lateral. Chin with a groove in front, edged with small tubercles. Thumb elongate; upper joint thin, longest; lower enclosed. Cutting teeth  $\frac{4}{4}$ ; two middle upper larger, truncate; lower in an arched continuous series.

*N. caudifer*, Leach's *Nicon* = *Glossophaga caudifer*, Geoff. Mem. Mus. iv. 418. t. 17 = *Monophyllus Leachii*, Gray, Zool. Sulph. 18.

*Hab.* Central America.

The two following belong to the tribe of Horse-shoe Bats, *Rhinolophina* :—

#### 5. AQUIAS.

*Ch. gen.*—*Prosthema* permagnum, complicatum, parte posteriore lanceolatâ erectâ, tribus magnis cellis utrinque; processus centralis compressus margine anteriore lato, expanso, foliaceo, lobato, medio basi convexo; ferrum equinum anterius magnum simplex expansum, centro inciso, setosum; labium inferius duabus verrucis triangularibus in medio notatum. *Mammæ* in pube distinctæ. *Alæ* a digitorum basi.

Nose-leaf very large, complicated; hinder part lanceolate, erect, with three large cells on each side in front; central process compressed, with an expanded broad foliaceous lobed front margin, and with a convexity in the front of its base edge, formed by a diverging ring on each side in front. The front horse-shoe large, simple, expanded, nicked in the centre, very hairy; lower lip with two triangular warts in the centre. Pubal teats distinct. Wings from the base of the toes.

This genus may be divided into two sections :—

1. The interfemoral acutely produced; tail as long as the shin and foot. *Rhinolophus luctus*, Temm.
2. Interfemoral truncate; tail as long as shin. *R. trifolius*, Temm.

We have a specimen in spirit in the Brit. Mus., which differs from Temminck's description of *Rh. luctus* in several particulars, but these differences may arise from his description having been taken from a dry specimen.

#### 6. RHINONICTERIS.

*Ch. gen.*—*Prosthema* breve, erectum, cellâ utrinque, et alterâ anteriore in medio basi; processus centralis compressus, anterius planus; ferrum equinum emarginatum, concavum; inter nares culmen fimbriatum. *Aures* magnæ. *Alæ* a talo. *Dentes* incisores  $\frac{4}{4}$  incis; superiores distincti; labium inferius triangulari tuberculorum mole scabrum.

Nose-leaf short, conical, erect, with a cell on each side and one in the centre of the front of its base; the central process compressed, flattened in front, and without any pit beneath; the horseshoe deeply nicked, concave, with a longitudinal anterior fringed ridge, ending in a pit behind, between the nostrils, and with a ridge over the nostrils on each side. Ears large, separate. Tragus none. Pubes —. Wings from the ankle. Cutting teeth  $\frac{4}{4}$ , notched; upper distinct; lower lip with a triangular group of small warts in front.

Type, *Rh. aurantius* = *Rhinolophus aurantius*, Gray; Eyre's Central Australia, i. 406. t. 1. fig. 1.

*Hab.* Port Essington.

#### 3. DRAFTS FOR AN ARRANGEMENT OF THE TROCHILIDÆ OR HUMMING-BIRDS. BY J. GOULD, ESQ., F.R.S. (CONTINUED.)

##### Genus ERIOPUS.

*Gen. char.*—Bill straight, moderately long; tail slightly forked;



tarsi thickly clothed with downy feathers, forming a thick ruff round the leg.

Sexes nearly alike in colour.

Type, *E. vestita*.

I beg to propose the above generic appellation for a section of this family, comprising those species distinguished by the extraordinary ruffs of downy feathers with which their tarsi are clothed, and by the sexes being nearly alike in the colour of their plumage. All the species known frequent the mountain districts of the Cordillerian Andes or the valleys immediately beneath them.

I possess five species of this form, and I have seen two others in the collection of Mr. Loddiges, which I believe to be equally typical.

Sp. 1. *ERIOPIUS VESTITUS*.

*Ornismya vestita*, Gouy de Longuemare; Less. in Rev.

Zool. 1838, p. 314; Boiss. Rev. Zool. 1839, p. 18,

1840, p. 8; Mag. de Zool. pl. —?

*T. uropygialis*, Fras. Proc. of Zool. Soc. 1840, p. 15.

*O. glomata*, Less. Echo du monde savant, young?

Sp. 2. *ERIOPIUS CUPREOVENTRIS*.

*Trochilus cupreiventris*, Fras. in Proc. of Zool. Soc. 1840,

p. 14.

*Ornismya maniculata*, Less. Echo du monde savant.

*Ornismya vestita* ♀, Gouy de Long. Rev. Zool. 1838,

p. 314.

*Ornismya glomata*, Less. Echo du monde savant, young?

Sp. 3. *ERIOPIUS ALINE*.

*Ornismya Aline*, Bourc. Rev. Zool. 1842, p. 373; Ann. de

Lyons, tom. v. 1842, p. 344. pl. xix.

Sp. 4. *ERIOPIUS MOSQUERA*.

*T. mosquera*, Bourc. et Delatt. Rev. Zool. 1846, p. 306.

Sp. 5. *ERIOPIUS DERBYI*.

*T. Derbyi*, Bourc. et Delatt. Rev. Zool. 1846, p. 306.

This group forms part of M. Lesson's *Race Vestipedes*, the genera comprised in which have not as yet I believe been defined.

4. AN ACCOUNT OF PALOLO, A SEA WORM EATEN IN THE NAVIGATOR ISLANDS. BY THE REV. J. B. STAIR, WITH A DESCRIPTION BY J. E. GRAY, ESQ., F.R.S. ETC.

The Rev. J. B. Stair kindly presented numerous specimens of this Sea Worm to the British Museum, but unfortunately most of the specimens are broken into short pieces, and as yet I have not been able to discover any specimen with a head. It appears to be a new genus allied to *Arenicola*, which may be thus described:—

PALOLA, Gray.

Body cylindrical, separated into equal joints, each joint with a small tuft of three or four spicula on the middle of each side. Head —? Last joint ending in a couple of tentacles. Eggs globular.

*Ann. & Mag. N. Hist. Vol. xix.*

*Palola viridis*, n. s.

Green, with a row of round black spots down the middle of the dorsal ? surface ; one spot on the middle of each joint.

*Hab.* Navigator Islands.

I have found accompanying this worm a single specimen of a green *Nereis*, which differs from it in being paler green above and whitish beneath, shorter, more depressed, and furnished with white tentacles.

The following is the account which Mr. Stair kindly communicated to me with the specimen from Samoa :—

“ *Palolo*.—Palolo is the native name for a species of Sea Worm which is found in some parts of Samoa (the Navigator Islands) in the South Pacific Ocean. They come regularly in the months of October and November, during portions of two days in each month, viz. the day before and the day on which the moon is in her last quarter.

“ They appear in much greater numbers on the second than on the first day of their rising, and are only observed for two or three hours in the early part of each morning of their appearance. At the first dawn of day they may be felt by the hand swimming on the surface of the water ; and as the day advances their numbers increase, so that by the time the sun has risen, thousands may be observed in a very small space, sporting merrily during their short visit to the surface of the ocean. On the second day they appear at the same time and in a similar manner, but in such countless myriads that the surface of the ocean is covered with them for a considerable extent. On each day, after sporting for an hour or two, they disappear until the next season, and not one is ever observed during the intervening time. Sometimes, when plentiful at one island in one month, scarcely any are observed the next ; but they always appear with great regularity at the times mentioned, and these are the only times at which they are observed throughout the whole year. They are found only in certain parts of the islands, generally near the openings of the reefs on portions of the coast on which much fresh water is found, but this is not always the case.

“ In size they may be compared to a very fine straw, and are of various colours and lengths, green, brown, white and speckled, and in appearance and mode of swimming resemble very small snakes.

“ They are exceedingly brittle, and if broken into many pieces, each piece swims off as though it were an entire worm. No particular direction appeared to be taken by them in swimming. I observed carefully to see whether they came from seaward or rose from the reef, and feel assured they come from the latter place.

“ The natives are exceedingly fond of them, and calculate with great exactness the time of their appearance, which is looked forward to with great interest. The worms are caught in small baskets, beautifully made, and when taken on shore are tied up in leaves in small bundles, and baked. Great quantities are eaten undressed, but either dressed or undressed are esteemed a great delicacy. Such is the desire to eat Palolo by all classes, that immediately the fishing parties reach the shore, messengers are despatched in all directions with large quantities to parts of the island on which none appear.

“ JOHN B. STAIR.”

5. NOTES ON CERTAIN MOLLUSCOUS ANIMALS. BY ARTHUR ADAMS, ESQ., R.N., ASSISTANT SURGEON TO H.M.S. SAMARANG.

The following notices refer to the animals that construct the shells of *Pyrula*, *Calpurnus*, *Radius*, *Terebellum*, *Rostellaria*, *Eulima*, *Stilifer* and some others, which I believe have not before been described, though the shells have long been known. The drawings were made from the living mollusks on the spot.

The genus *Bullina* of Risso or *Cylindrella* of Swainson has an external subcylindrical shell covered with a thin reddish-brown epidermis. The mantle is enclosed; the foot elongate, linear, truncated, and with three conical tubercles behind. The cephalic disc is subtrigonal, broad, rounded in front, and produced behind on each side into a flat tapering process, with the eyes on the outer side of its base. They crawl very slowly, moving by an almost imperceptible series of undulations of the foot. Dredged in fifteen fathoms, between Borneo and Billiton. Mr. Gray informs me that M. Lovèn has recently described the animal of a northern species of this genus under the generic name of *Cylichna*.

The animal of *Akera*, Müller, *Vitrella* of Swainson, or the *Bulla resiliens*, is pale brown, with the foot very much expanded, narrower and rounded in front, broad and truncated behind, and with the sides sometimes bent up. The head-disc is elongated, rather broader, and slightly notched in front, but narrower and linear behind. Eyes none. The shell is perfectly external, and there is a fimbriated edge projecting through the slit in the spire. From Unsang, Borneo.

This animal agrees with Lovèn's description of the northern species. Müller figures the animal of *Akera bullata*, a northern species of this genus, in the 'Zoologia Danica'; and M. Lovèn in his recent work has observed, that Müller's species emits through the slit in the back of the whorls a series of elongated slender beards, which are appended to the mantle's edge.

The mollusk that constructs the shell of *Bulla smaragdina* would appear to form the type of a new genus. The shell is naked above. The foot moderate, rounded before and behind; the side-edges reflexed and covering the sides of the shell. The head-disc is five-sided, rather broader on each side in front, flattish above with two small tubercles in front of the central eyes, and narrower and nicked behind. It is amphibious, though entirely marine, crawling slowly on rocks immediately above the ripple of the sea. The eyes are black and sessile; the tentacula short and anterior to the eyes. The animal is dark olive-green, with the margin of the foot and mantle of a light colour, and mottled and speckled. Cagiani Islands and Disaster Island near Japan.

In *Calpurnus* of De Montfort the mantle adheres to the sides, but does not cover the shell. It is dead-white and covered with round black spots. The foot is large, thin, flat, expanded, and marked like the mantle. The tentacula are tapering with a broad black band near their extremities. The eyes are large and black, and are placed



at the outer base of the tentacles. The longest slope and narrowest end is the forepart of the shell.

Taken alive at the southern extremity of Mindoro, not far from Ylin: in shallow water and on a sandy bottom.

In *Radius* or *Ovulum Volva* the mantle is covered with nipple-shaped tubercles, the nipples and areolæ of which are dark-coloured. The tubercles extend to the extremities of the beaks of the shell. The foot is moderate and folded longitudinally. The tentacles are elongate and subulate. Dredged in five fathoms from a rocky coral bottom on the shores of Basilan.

The *Radius* is slow and languid in its movements, sliding along deliberately, and not more sensible to alarm than *Cypræa* or *Calpurnus*.

In the genus *Pyrula*, Lamk. (*Ficula* of Swainson), the siphon is elongate, subcylindrical, and produced in front. The head slender; the tentacles subulate, on the side of the extremity of the head, and separate from one another at their bases. Eyes sessile on the outer side of the base of the tentacles. The mantle is produced on each side into a rounded lobe equally reflexed on each side of the shell. The foot is very large and expanded; rounded in front, and rather produced on each side of the anterior margin, and expanded and broad with a small central point behind. There is no operculum. The head is marbled with light violet and the tentacles white. Six white opaque spots are arranged round the upper surface of the edge of the foot. There is another very beautiful species of *Ficula* with a pink mantle, mottled with white and deeper pink, the under surface of the foot dark chocolate-colour with sparse yellow spots. The first-mentioned species is from the west coast of Borneo, from seventeen fathoms, muddy bottom, and the latter from thirty-five fathoms in the sea of Mindoro.

Mr. Gray has observed that Lamarck established his genus *Pyrula* on this species, *Bulla ficus*, Linn., therefore the generic name should be retained for this form of animals, which he regards as an intermediate link between *Muricidæ* and *Cypræidæ*.

The animals of *Ancillaria* crawl with a sliding motion and with considerable celerity. The specimens we found on the east coast of Africa were of a dirty white colour with dull brown blotches. When alarmed, the entire animal is retracted within the shell.

The genus *Marginella* has an elongated slender tapering siphon, with the tentacles also elongate and slender, bearing the eyes at their outer side just above the base. The foot is large, broad, truncated in front, rather acute behind, and extends beyond the shell on all sides. The mantle is thickened, and reflexed partly over the entire circumference of the shell. The animal, when roughly handled, retracted itself entirely into the shell. Dredged up in three fathoms water, sandy bottom, not far from Anger in Java.

A second species from the east coast of Africa is similar to the former, but the foot is rather more expanded and more rounded behind. The left side of the mantle is rather more produced over the



back of the shell than the right. The end of the tentacula and siphon in this species is yellow and the basal part streaked with carmine. The foot and mantle are semi-transparent flesh-colour, streaked with deep carmine.

These *Marginellæ* are quicker and more lively in their movements than *Cypræa*, crawling pretty briskly and moving their tentacles in various directions.

The head of *Eulima* is small; the tentacles are subulate, close together at the base, rather thicker at that part, and slender beyond. The eyes are placed on the back of the head behind the base of the tentacles. The foot is rather expanded, rounded and somewhat produced on each side in front, and rounded in behind. Operculum ovate, subspiral. The animal is entirely opaque pearly white. The eyes black and generally concealed under the front of the shell. Tentacles yellow at the tip, orange in the middle, and white at the base.

Mr. Gray states that he places this genus with the family *Pyramidellidæ* in his arrangement, and it chiefly differs from *Pyramidella* in having no plaits on the pillar-lip. It is a slow and excessively timid animal. From eight fathoms water; Philippines.

The tentacula of the more elongated species of *Melania* are subulate, close together at the base, with the eyes on short peduncles on the outer side of the base. The trunk is oblong, expanded and annulated, with a central cylindrical groove. The foot is expanded, rather produced and acute behind, with the operculum on the front of the upper surface. Operculum orbicular and many-whorled. They are generally found partially buried in the ooze formed by decayed vegetable matter where weeds abound, and where the water is verging towards stagnation.

The animal of *Turritella* is rather small for the size of the aperture of the shell; the head is small and oblong; the tentacula short and subulate, with the eyes on the middle of their outer side. The foot is moderate and slightly notched in front. Operculum orbicular, horny, many-whorled, with an epidermic fimbriated margin.

This mollusk is very shy and sensitive, retiring quickly within its shell on the slightest alarm. It is slow-moving and inactive.

The tentacula of *Pleurotoma* are subulate and close together at the base, and the eyes are near the outer side of the tip, which latter tapers off beyond them. They generally inhabit pretty deep water and crawl tolerably fast.

*Fusus*, Lam., has an elongated subcylindrical siphon, with subulate tentacles close together at the base, and becoming more slender beyond the eyes. Eyes placed rather above the middle of the outer side. Foot moderate. Operculum annular, oblong.

The *Cerithium truncatum* has a broad suborbicular and expanded foot, and an elongated subcylindrical annulated trunk. The tentacula are short with the eyes at the tip. It is found generally in brackish water in mangrove swamps and the mouths of rivers. Sometimes they crawl on the stones and leaves in the neighbourhood, and sometimes they are found suspended by glutinous threads to boughs

and the roots of the mangroves. Mr. Gray (vide Proc. Z. S. 1833, p. 112) states he has found the *Rissoa* similarly suspended. From the swamps of Singapore and banks of rivers in Borneo.

The animals of *Quoyia* are amphibious like *Conovuli*, being found in the shallow water at the roots of the mangroves or adhering to stones not far inland, but exposed to the sun. They are fond of those little bays where the water is shallow and the ripple gentle.

In *Phorus* the separation from the foot is by a large space produced into a subcylindrical annulated trunk. The tentacles are tapering and elongate, with the eyes sessile on the outside of their base. The foot is small and divided into two parts, the front rather expanded, the hind part small and tapering, carrying a large operculum. Operculum ovate, subannular? Penis elongate fusiform from the right side, rather below the base of the tentacula. These animals are small for the size of the mouth of the shell, and have much the general appearance of the animal of *Strombus*, like which they appear to walk, but their eyes are sessile. In colour they are dull opake white, the proboscis pinkish and the eyes black. They crawl like a tortoise by lifting and throwing forward the shell with the tentacles stretched out, the proboscis bent down and the operculum trailing behind. They are numerous in the Javan and China seas, preferring deep water, and a bottom composed of detritus of dead shells and sand mixed with mud.

This genus has been generally placed with the *Trochi*, and some have proposed to remove it to near *Calyptrea*; but Mr. Gray, in his systematic arrangement of the genera of mollusca published in the Synopsis to the British Museum (1840), p. 119, formed for this genus a peculiar family under the name of *Phoridae*, having observed that the animal, though a *Phytophagous* mollusk, had the annular operculum of the *zoophagous* division.

The animal of *Terebellum* has an annulated elongate proboscis with a central groove. The eyes are on the end of long cylindrical peduncles, one placed on each side of the base of the trunk and unequal in length and origin. The body is thick and short; the foot ovate, broad, rounded in front and tapering behind. Operculum triangular, small, and serrated on the outer side with a great part free. This genus is on the confines of the family of *Strombidae*, where Mr. Gray first proposed to place it (see Synopsis, British Museum, 1841, p. 84, and 1842, pp. 52 and 89), for it agrees with the animal of that group in having the eyes placed at the ends of elongated peduncles, and in having the operculum triangular and serrated on the outer edge; but it differs from them in having no tentacula arising from the upper part of the peduncle beneath the eyes, and in having a thicker body and a broader and flatter foot.

One specimen, from which I made a sketch, was taken in the Javan sea, the other is from the Caramata Passage.

The animal is exceedingly shy and timid, retracting its body into the shell on the slightest alarm. It will remain stationary for a long time, moving its tentacula about cautiously in every direction, when suddenly it will roll over its shell and continue again perfectly quiet.

With regard to *Rostellaria rectirostris*, or more properly *rectirostrata*, I have a few words to say before I conclude this somewhat desultory communication.

The animal of this genus is exactly like that of *Strombus*. The body is subcylindrical, marbled with rich brown on the outer side, and white on the inner and front side. The trunk is subcylindrical, and annulated with a central broad line of deep bronze-black. The margins yellow with a narrow vermilion line externally. The eyes are on long cylindrical peduncles, of a deep blue with a black pupil. The tentacula are subulate, elongate, arising from the peduncle rather below the eye. The foot is narrow, rather dilated in front and small behind. The operculum is ovate, triangular, annular, semi-transparent and horny. Living in black muddy sand in thirty-one and a half fathoms water. The specimen I figured was dredged on the coast of Borneo.

*Rostellaria* has all the habits of the *Strombidae*, progressing by means of its powerful and elastic foot, which it places under the shell in a bent position, when suddenly by a muscular effort it straightens that organ and rolls and leaps over and over. It is however far more timid and suspicious than *Strombus*, which has a bold disposition.

The animal of the genus *Stilifer*, which I found living on the body of a starfish (*Asterias*) on the coast of Borneo, had two elongate subulate tentacles, with the eyes sessile near the outer side of their base, and a small rounded head. The mantle is entirely enclosed and covered by the thin shell, and the foot is narrow, slender, very much produced beyond the head in front and scarcely extended at all behind.

The animal of this genus was described and figured in Mr. Sowerby's 'Genera of Shells' from a specimen in spirits brought home by Mr. Cuming, where the fleshy part enveloping the shell in its contracted state was considered as the mantle.

Mr. Gray, in the Synopsis before referred to (ed. 1842, p. 60), from the examination of these figures, placed the genus in the family of *Naticidae*, and observes that "what has been called the enlarged mantle appears like the foot;" and the above description of the animal shows the accuracy of Mr. Gray's conclusion, both as to the proper nature of the fleshy part and the position of the genus in the system.

In the shallow pools left by the receding tide on the shore of Koo-Kian-San, one of the Maiacoshima group of islands, I discovered a large species of *Dorididae*, which appears to be the type of a new genus, differing from all the other genera of the family in having the vent, and the gills which are extruded from it, situated beneath the edge of the mantle, which latter is extended beyond the circumference of the foot, while in all the other genera, as far as I am aware of, the vent and gills are situated on the mantle itself. This genus may be called *HYPOBRANCHIÆA* \*.

\* ὑπὸ (*sub*), βραγχίαια (*branchiis prædita*). The specific name might be "depressa," from its flattened appearance.



*Ch. gen.*—Brachiis ano circumdatis, sub posteriore pallii margine positis. Pallio lato, ultra pedem extenso; duobus tentaculis claviformibus; corpore depresso.

The animal (*Hypobranchia fusca*) was of a sandy colour, the central disc deeper, with oblong blotches of a dark brown colour. In length about six inches, and in breadth two and a half. The under surface was light chocolate-colour, and the tentacula reddish brown. It crawled upon its flattened ventral disc in a slow and languid manner, and when detached and thrown into deeper water floated some time by undulating the free thin edges of the mantle, and gradually sunk to the bottom.

6. DESCRIPTIONS OF NEW SPECIES OF SHELLS COLLECTED IN THE EASTERN ARCHIPELAGO BY CAPT. SIR EDWARD BELCHER AND MR. ADAMS DURING THE VOYAGE OF H.M.S. SAMARANG. BY LOVELL REEVE, F.L.S.

*CHITON COREANICUS.* *Chit. testâ ovatâ, elevatiusculâ, valvis terminalibus cæterarum areisque lateralibus radiatim sulcatis, interstitiis convexis peculiariter granatis, granis prominentibus, rotundatis, solitariis, valvâ terminali posticâ umbonatâ, extremitate radiatâ parvâ, brevi; areis centralibus longitudinaliter tenuissimè granato-liratis, lirarum interstitiis excavatis; areis lateralibus nigricante-viridibus, granis lutescentibus, areis centralibus lutescentibus nigro variè maculatis et variegatis; ligamento tenuiter granoso-coriaceo, nigricante-viridi et virescente concinnè tessellato.*

Long.  $1\frac{5}{8}$  poll.; lat. 1 poll.

*Hab.* Korean Archipelago, under stones.

The sculpture of this species is not much unlike that of the *C. luridus*; still it is distinct, and accompanied with a very characteristic style of painting. The central areas of the shell are of a yellowish ground, blotched and variegated with black. The terminal and lateral areas are very dark green, with the prominent granules conspicuously tinged here and there with yellow. In addition to these peculiarities, the ligament is strikingly tessellated with dark and pale sea-green.

*CHITON FULIGINATUS.* *Chit. testâ oblongâ, valdè elevatâ, valvis terminalibus cæterarum areisque lateralibus subirregulariter concentricè striatis, prope marginem incis, areis centralibus lævibus, sub lente minutissimè reticulatis; sordidè albâ, nigro plus minusve sparsim fuliginatâ; ligamento corneo, angusto, fusco.*

Long.  $\frac{5}{8}$  poll.; lat.  $\frac{5}{16}$  poll.

*Hab.* Korean Archipelago.

The terminal and lateral areas, the latter of which are so slightly raised as to be nearly on a plane with the rest of the shell, are striated concentrically, the striæ next the margin being somewhat deeply engraved. Of numerous specimens collected at the above-mentioned islands, all are of a uniform dull white, more or less sparingly bespotted with black.



**CHITON ACUTIROSTRATUS.** *Chit. testâ elongatâ, medio elevatâ, lateraliter subcompressâ, valvis summitate obtuso-carinatis, lævibus, utrinque creberrimè planigranatis, umbonibus productis, acutè rostratis, valvarum areis lateralibus parvis, subindistinctis, concavis; albidâ, summitate nigro hic illic inquinatâ; ligamento corneo, spicularum cristâ parvâ ad latus utriusque valvæ munito.*

Long.  $1\frac{1}{8}$  poll.; lat.  $\frac{1}{2}$  poll.

*Hab.* Cape Rivers.

An elongated species, of somewhat angularly compressed growth, remarkably distinguished by the sharply beaked structure of the umbones; the flatly-grained sculpture of the valves approaches that of *C. hirudiniformis*, to which it offers a singular contrast of colour.

**CHITON PETASUS.** *Chit. testâ parvâ, subabbreviato-ovatâ, valvis medio areâ trigonâ subrostratâ politâ, utrinque rugoso-granatis; vividè coccinè; ligamento latissimo, præcipuè anticè, quoque vividè coccineo, setis pilisve brevibus hic illic obsito.*

Long. 1 poll.; lat.  $\frac{3}{4}$  poll.

*Hab.* Cape Rivers.

A beautiful little bright scarlet shell enframed within a broad swollen ligament of the same very striking colour; in the form of the ligament it is the nearest approach I have seen to that remarkable species the *C. Blainvillii*.

**CHITON FORMOSUS.** *Chit. testâ oblongâ, subangustâ, valvis undique subtilissimè longitudinaliter striatis; vividè coccinè; ligamento corneo, spiculis vitreis nitidè albis densè obsito, spicularum cristâ densâ erectâ ad latus utriusque valvæ.*

Long.  $\frac{1}{2}$  poll.; lat.  $\frac{3}{16}$  poll.

*Hab.* Cape Rivers.

A most exquisite little species of a bright scarlet colour, surrounded with dense tufts of white shining glassy spiculæ. Of this and the two preceding species only a single specimen of each was obtained.

**CARDIUM BECHEI.** *Card. testâ subcordato-ovatâ, medio et anticè lævigatâ, striis minutis superficialibus radiantibus et concentricis sub lente decussatâ, epidermide tenui cornè nitente in funiculis fibrisve concentricis creberrimè dispositâ; areâ posticâ, epidermide nullâ, radiatim costatâ, costis tenuibus, confertis, quinque et viginti ad triginta, spinis brevibus compressis densissimè seriatim ornatis; undique pulcherrimè rosèd, intus albâ.*

Alt. 2 poll.; lat.  $1\frac{1}{8}$  poll.

*Hab.* Sooloo Seas and Korean Archipelago.

I have much pleasure in dedicating this species, at the desire of Capt. Sir Edward Belcher, to Sir Henry De la Beche, Director of the Ordnance Survey and President of the Geological Society. It forms a most interesting addition to the genus *Cardium*, and is without exception the most striking and distinct from any hitherto known that can well be imagined. In colour it is of a pure rose tint, with the following singular contrast of character. The middle and anterior portion of the shell is smooth, presenting a peculiar soft velvety

appearance, the effect of its being minutely decussated with concentric and radiating striæ, and covered with an exquisite thin shining horny epidermis, disposed in fine concentric cords, abruptly terminating at the posterior area. The posterior portion, accordingly destitute of epidermis, is very thickly rayed with ribs of short compressed spines, as if the delicately clad surface of the shell had been thus far ploughed up, as it were, into furrows.

Only two odd valves of this pre-eminently beautiful shell were obtained, and, singularly, in localities very remote from each other; one was dredged at the depth of forty fathoms in the Sooloo Seas, between the islands of Borneo and Mindanao; the other in the Yellow Sea, thirty degrees north, at one of the islands of the Korean Archipelago.

March 23.—William Yarrell, Esq., Vice-President, in the Chair.

The following communications were read:—

1. NOTE ON THE BREEDING OF THE OTTER IN CONFINEMENT IN THE ZOOLOGICAL GARDENS, REGENT'S PARK, IN 1846. BY JAMES HUNT, HEAD KEEPER.

The female Otter was presented to the Society by Lady Rolle on the 4th of February 1840, being apparently at that time about three months old. She remained without a male till the 11th of March 1846, when a large male was presented to the Society by the Rev. P. M. Brunwin, of Braintree, Essex, in whose possession it had been for some months, and had been kept in a cellar. His weight when first taken was 21 lbs., but he was not above half that weight when he arrived at the Gardens, having wasted much in confinement and become very weak in the loins, from which he soon recovered after his arrival. About a month after his arrival there was a continual chattering between him and the female during the night, which lasted for four or five nights; but they did not appear to be quarrelling. Nothing further was observed in their manners or in the appearance of the female to make me think she was with young, until the morning of the 13th of August, when the keeper that has the charge of them went to give them a fresh bed, which he does once a week; while in the act of pulling out the old bed he observed two young ones, apparently five or six days old, and about the size of a full-grown rat: he immediately put back the bed, with the young on it, and left them. On the 21st the mother removed them to the second sleeping-den, at the other end of their enclosure, and several times after she was observed to remove them from one end of the house to the other, by pushing them before her on a little straw; her object in removing them appeared to be to let them have a dry bed: on the 9th of September they were first seen out of the house; they did not go into the water, but crawled about, and appeared very feeble.

On the 26th of September they were first seen to eat fish, and follow the mother into the water: they did not dive into the water like the mother, but went into it like a dog, with their head above water; and it was not until the middle of October that they were

observed to plunge into the water like the old ones. On the 22nd of December the water was let out of the pond for the purpose of cleaning it, which is done once a week: the animals were shut up in their sleeping-den, but they let themselves out when the pond was but half-full of water, and the young ones got into it and were not able to get out without assistance; after they had been in the water some minutes the mother appeared very anxious to get them out, and made several attempts to reach them from the side of the pond where she was standing; but this she was not able to do, as they were not within her reach. After making several attempts in this manner without success, she plunged into the water to them, and began to play with one of them for a short time, and put her head close to its ears, as if she was making it understand what she meant; the next moment she made a spring out of the pond, with the young one holding on by the fur at the root of the tail with its teeth; having safely landed it, she got the other out in the same manner: this she did several times during a quarter of an hour, as the young ones kept going into the water as fast as she got them out. Sometimes the young held on by the fur at her sides, at others by that at the tail. As soon as there was sufficient water for her to reach them from the side of the pond, she took hold of them by the ears with her mouth and drew them out of the pond, and led them round the pond close to the fence, and kept chattering to them, as if she was telling them not to go into the pond again.

2. NOTES IN ADDITION TO FORMER (Zool. Proc. 1843, p. 108, and 1846, p. 9) PAPERS ON SOUTH AMERICAN ORNITHOLOGY. BY T. BRIDGES, ESQ., CORR. MEMB.

The beautiful species of *Eudromia* mentioned in my letter to Mr. Waterhouse (Proc. for 1846, p. 9) proved to be the bird characterized by Mr. Vigors under the name of *Tinamotis Pentlandii* (Proc. 1836, p. 79). On September 15, 1845, I found three couple in the pass of Tapaquilcha, between the town of Calama and the city of Potosi: they were close to the snow, at an altitude of about 14,000 feet, with the *Pepoazæ*, skulking among the isolated stones which not unfrequently occur in grassy places in the valleys of the main chain of the Andes. When they rise they utter a shrill and loud whistle, and fly a mile perhaps, getting up rapidly and shooting off in a horizontal direction.

About twenty miles further on the road I stopped at a post-house, and there the natives brought a fresh-laid egg, which they said was the egg of this species. There could be no doubt about it, as I was engaged at the time in skinning one of the three specimens we had obtained. It was light green, larger than a lapwing's, and very obtuse at each end. It had none of that polished texture which is so characteristic in the Tinamous. I regret that it was accidentally broken.

Although I sought for this bird in many similar situations throughout Bolivia, I never again succeeded in finding it.



*Tinamotis elegans*; *Eudromia elegans*, D'Orb. & Geoff. Mag. de Zool. 1832, t. 1.

I met with this species on the eastern side of the Andes—I believe it never occurs on the Chilian side—in the vicinity of the city of Mendoza, in the Argentine Republic. It has an immense range over the grassy plains at the base of the Andes which run southward to Patagonia. I believe it generally is found in pairs; at least the only two I ever saw alive were together. My men informed me that it is abundant on the Pampas, near the forts of San Raphael and San Carlos, between 33° and 34° south lat.\* The young bird presents no difference in plumage from the adults, having even the crest well-developed: it seems therefore to form an exception to the generally received rule, that where the parent birds have the same plumage the young is different from either.

The Indians have a singular method of taking this bird. Having attached a noose to the end of a cane four or five yards long, they walk round and round in gradually contracting circles, until they are near enough to slip the noose over its head, and then, with a sudden jerk, they strangle it.

*Attagis Gayii*, Geoff. et Lesson, Cent. Zool. t. 47.

I believe the Chilian and Bolivian species are identical. I found the bird on the same day as *Tinamotis Pentlandii*, inhabiting the margins of frozen brooks near the post-house of Tapaquilcha. The Indians there know it as the Puco-puco, from its call-note. Like *Thinocorus D'Orbignianus*, these birds evince great attachment to each other, and call immediately if separated. At that season they were in pairs and breeding, but I did not obtain the egg.

*Diglossa carbonaria*, D'Orb. & De Lafres.

*Diglossa sittoides*, D'Orb. et De Lafr.

Birds of this genus are found in the temperate region, where the thickets commence, at an altitude of from 8000 to 10,000 feet. I found these species among bushes of *Salvia* and *Eupatorium*, on the slopes which fall into the valley of Cochabamba, and most abundantly at a place called Ticquepayá. They have precisely the habits of flycatchers. *D. carbonaria* I have watched often, sitting motionless on the highest twig of a bush until he discovered a passing insect, on which he descended, and then returned to his post. I may mention that the vicinity of Cochabamba was the only district in which these two species occurred to me.

*Diglossa mystacalis*, De Lafr.; *Diglossa mystacea*, G. R. Gray in Gen. of Birds, pl. 42.

Lives entirely in the thickets, hopping from bough to bough, as if in pursuit of insects. I have often seen this species insert its bill into a scarlet and purple flower allied to the *Arbutus*, but whether for the purpose of capturing insects or of extracting honey I was not able to ascertain. Its habitat is the Yungas of La Paz.

\* The specimens now in the British Museum were obtained from this locality, as well as those of *Rhea Darwinii*.



I believe that the specimen described by M. le Baron De Lafresnaye was from my collection.

*Colaptes rupicola*, D'Orb., is a Bolivian species, entirely terrestrial. I found it on the elevated table-land called the Punas, which form the departments of Potosi, Chuquisaca, Cochabamba, La Paz, and Oruro. They are occasionally intersected by valleys and isolated mountains, but the unbroken plains are sometimes several leagues in extent. You find *C. rupicola* at an altitude of 12,000 to 14,000 feet, and generally in the grass, where it feeds. On being disturbed it takes an undulating flight towards some rock, on which it settles, for this country is entirely destitute of trees. It most frequently occurs in little companies of five or six.

Another species of *Colaptes*, which frequents the warm plains of Moxas, near the town of Trinidad, not unfrequently resorts to the trees which there grow in forest patches, and in this particular it resembles *C. chilensis*.

The genus *Dendrocolaptes*, as far as I have had opportunities of observing their habits, exactly resemble the woodpeckers, ascending the trees and searching the bark in a similar manner, and even supporting themselves by the tail. In the plains between the Indian town of Loretto and Trinidad, about long. 62°, I found a beautiful instance of the modification of form to a particular end; in the apparently singular species

*D. procurvus*, D'Orb. & De Lafr.

As far as my experience goes, it only occurs in the open palm-groves which crown the undulating elevations which here and there rise up above the ordinary level of this district. In them I found a palm called Mutacu, with foliage like the date-palm. The short peduncles of the fallen leaves afford shelter to numerous coleoptera, and they grow from the trunk in a curve exactly similar to that which characterizes the bill of this species, so that as he runs up the trunk he is able to search all these lurking-places to the very bottom, although their form renders them impregnable to every other assailant.

In the dense forests, where this particular palm is never to be found, I observed an abundance of the other species, but *D. procurvus* not once.

### 3. DRAFTS FOR A NEW ARRANGEMENT OF THE TROCHILIDÆ. BY JOHN GOULD, F.R.S. (CONTINUED FROM p. 409.)

The *Ornism. Sappho* of Lesson, and a nearly-allied species which I shall describe in the present paper, appear to differ in so many characters from all the genera of this family hitherto instituted, that I propose to place them in a distinct genus or subgenus, under the name of COMETES, with the following characters:—

COMETES, nov. gen.

*Char. gen.*—*Rostrum* capite longius, cylindraceum, decurvatum. *Cauda* valdè furcata, plumis latis, truncatis. *Tarsi* nudi. *Pedes* moderati. *Digitus* et *unguis* postici digito et ungue mediis breviores.

*Gen. char.*.—Bill longer than the head, cylindrical, and curving downwards; tail much-forked, feathers broad and truncate; tarsi bare; feet moderately large; hind-toe and claw shorter than the middle toe and claw.

1. COMETES SAPPHO. *Ornism. Sappho*, Less., Ois. Mouch. t. 27, 28.

2. COMETES PHAON, sp. nov. *Com. (Mas) capite, collo, alarum tectricibus, et corpore inferiore, brunni-viridibus; dorso, caudæ tectricibus, caudæque, intensè fulgente coccineis; rectricibus ad basin nigro-fuscis, ad apicem holosericis atris; alis fuscis purpurascensibus; guld luminosè metallicè viridi.*

*Male*.—Head, neck, wing-coverts and under surface brownish green; back, upper tail-coverts and tail rich deep lustrous crimson; bases of the tail-feathers blackish brown; the tips deep velvety black; wings purplish brown; throat rich lustrous metallic green.

*Female*.—Tail of the same crimson colour as that of the male; she also possesses the lengthened and curved bill.

Total length, 7 inches; bill,  $1\frac{1}{8}$ ; wing,  $2\frac{3}{4}$ ; tail, 4.

This fine species is a native of Peru, and differs from the *Sappho*, which inhabits Bolivia, in having the tail rich crimson instead of flame-colour, and in having a much longer and more curved bill. The two specimens exhibited, which are male and female, have been kindly lent me, for the purpose of describing, by the Earl of Derby.

April 13.—William Yarrell, Esq., Vice-President, in the Chair.

The following communication was read:—

#### DESCRIPTION OF A NEW SPECIES OF FULIGULA.

By A. D. BARTLETT.

FULIGULA FERINOIDES. *Fulig. ferinoides fuligulæ ferinæ similis, sed magnitudine minori, colore saturatori, alis speculo albo conspicuè notatis, oculis stramineis, trachæ paulò longiore et angustiore, et sterno multo minore, diversè; emarginationes tamen sterni ejus iis ferinæ sterni magnitudine æquales.*

*Paget's Pochard.* Adult male: Upper part of head, neck and cheeks reddish chestnut, tinged with purple; a small triangular spot of white at the commencement of the feathers under the bill; chin, throat, lower part of neck and breast black, darkest on the breast; back, scapulars, flank and side-feathers finely freckled with transverse lines of black on a greyish-white ground; greater wing-coverts and primaries greyish-black, the latter darkest at the tips; secondaries white, forming the speculum; tips of the feathers black, edged with white; rump, tail, upper and under tail-coverts brownish black; belly mottled, the tips of the feathers being white, the remaining portion brownish; bill and legs bluish slate; the tip of the former and the webs and *claws* of the latter black; the eyes straw-colour. The young birds differ in having the head, neck and breast of a lighter and brighter chestnut-red (becoming darker as the bird advances to maturity); the under tail-coverts greyish-white.

Entire length,  $17\frac{1}{2}$  inches; wing, from carpal joint,  $7\frac{3}{4}$ ; bill, from forehead,  $1\frac{3}{4}$ ; middle toe and claw,  $2\frac{1}{2}$  inches.

I have proposed the above specific name for this bird, as it appears more closely allied to our common Pochard than to any other species. I have called it, at Mr. Fisher's suggestion, Paget's Pochard, after the late E. J. Paget, Esq., of Great Yarmouth, a gentleman well-known as a zealous and accomplished naturalist, and one of the authors of the 'Sketch of the Natural History of Great Yarmouth and its Neighbourhood,' near which place the first authenticated British specimen was obtained.

*Remarks.*—This bird may be readily distinguished from the common Pochard (which it most resembles) by its smaller size, darker colouring, the conspicuous *white speculum* on the wing, and the colour of the eyes. The female is unknown to me, but I presume it will much resemble the female of the Pochard, and will doubtless possess the white speculum on the wings.

The *trachea* of *F. ferinoides* differs from that of *F. ferina* in being rather longer and narrower, the tube being much narrower at the upper part, gradually enlarging towards the middle, where it is largest, and contracting gradually towards the end, which is its smallest part: the labyrinth is smaller in front, but much wider and differently formed on the left side; the enlargement at the bottom of the tympanum is also greater than that of the corresponding part in *F. ferina*: although the sternum is much smaller, the emarginations are quite equal in size to these parts in *ferina*.

With reference to the supposition that these birds are hybrids, I beg to remark, that I have paid some attention to the subject of hybrids, and have compiled a list of the different species of Water Fowl (as far as I have been able to collect) which have produced hybrids. On referring to this list it will be seen that nineteen different kinds are mentioned; five of these are referable to the *Common Goose*, and five of them to the *Common Duck*; the remaining nine kinds are referable to species commonly kept, and which breed freely in a state of captivity. I am unable to find one instance of any species of the genus *Fuligula* (which includes no less than 15 species) having under any circumstances crossed. These birds are most difficult to breed in a state of captivity; I have known several pairs of the Common Pochard (*Fuligula ferina*) kept for years in places well-suited for breeding (where many wild species and one of this genus annually breed), yet these birds showed no inclination to breed, although they were perfectly healthy, and assumed the breeding dress at the proper season. As these birds have the power of suppressing and checking their desires when not in a perfect state of nature, I cannot imagine or think it probable that they would associate and breed, in a state of nature, with species distinct from themselves, possessing as they do the power of travelling over the globe if necessary to find a mate of its own species. Again, the fact of three specimens having been obtained at distant periods, agreeing in internal as well as external characters, is I think sufficient to prevent any one entertaining such an opinion.



## List of Hybrids.

Common Goose.....	{	Hooper Swan.
		Chinese Goose.
		Canada Goose.
		Bernacle Goose.
Egyptian Goose.....	{	White-fronted Goose.
		Chinese Goose.
		Spur-winged Goose.
		Common Duck.
Canada Goose .....	{	Chinese Goose.
		Bernacle Goose.
Bean Goose .....		Pink-footed Goose.
White-fronted Goose .....		Bernacle Goose.
Common Duck .....	{	Muscovy Duck.
		Sheldrake.
		Pintail Duck.
		Wigeon.
Shoveller .....	{	Egyptian Goose.
		Garganey Teal.
Pintail .....		Wigeon.

## BOTANICAL SOCIETY OF EDINBURGH.

April 8, 1847.—Dr. Greville, President, in the Chair.

The following communications were read :—

1. "Description of an East Indian Palm, *Areca triandra* of Roxburgh," by Dr. Balfour. The plant has recently flowered in the Botanic Garden; and cut specimens of the spadix, spathe and leaves, with a drawing and dissections of the flowers, were exhibited.

2. "Notes of a botanical trip to the Isle of Wight, in August and September 1846, with remarks on the geographical distribution of the British Flora," by Dr. Balfour. After giving a general description of the geological features of those parts of the island which he had visited, Dr. Balfour enumerated some of the rarer plants found by him near Yarmouth, the Needles, Ventnor, Ryde, and Newport: among these were some of the rarer species of *Rubi*, *Calamintha sylvatica*, *Cyperus longus*, *Matthiola incana*, *Orobancha barbata*, *Inula Helenium*, *Spartina stricta*, *Dianthus prolifer*, *Melampyrum arvense*; remarkable specimens of *Campanula glomerata*, about an inch high; *Agrostis setacea*, *Calamagrostis lanceolata*, *Tamarix anglica*, *Hieracium inuloides*, &c. &c. Dr. Balfour next alluded to the nature of the plants found in the island in a geographical point of view, as belonging to Professor E. Forbes's Devon Flora and Norman Type; and illustrated his remarks by a set of specimens, so arranged as to show at one view the various Floras of Great Britain and Ireland.

Dr. Balfour afterwards read extracts from a letter from Mr. N. B. Ward of London, giving a short account of the successful mode in which he has been cultivating the rarer ferns, *Jungermannia*, and mosses in his plant-cases.